

FIRST RECORDS OF ODONATES (ARTHROPODA: INSECTA) FROM THE SILENT VALLEY AND NEW AMARAMBALAM RESERVED FORESTS¹

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AND

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A list of 23 Odonate species constituting the first records of Odonate fauna of the Silent Valley and New Amarambalam Reserved Forests, Kerala, Southern India has been provided along with necessary collection data and field observations.

INTRODUCTION

The Silent Valley and the New Amarambalam Reserved Forests constitute the thickest evergreen tropical forests of the Western Ghats occupying the southwestern slopes of the Nilgiri plateau. The area surveyed covers the deciduous forests of Nilambur plains to the semi-evergreen and evergreen tropical forests of Silent Valley. Kuntipuzha in the Silent Valley and Cherrapuzha in the New Amarambalam Reserved forests are the main rivers which drain the respective forests. The Silent Valley, 45 Km north of Mannarghat in Palghat district of Kerala receives on an average an annual rainfall of 3000 mm. The temperature ranges between 44.67° F to 85°F.

Our knowledge of Odonate fauna of south India is confined to the works of Fraser (1924, 1932, 1933, 1934 & 1936) on the odonata fauna of Western Ghats, south of Maharashtra. The odonates of the Silent Valley and New Amarambalam Reserved Forests have not been reported on before.

The present study is based on the collec-

tions made by Dr. R. S. Pillai from the Silent Valley and by Shri K. R. Rao and Shri T. S. N. Murthy from the New Amarambalam Reserved Forests. Twenty-three species are reported in this paper out of which so far 4 are known only from Southern India especially from the Nilgiris, 13 are oriental in distribution, while the rest are widely distributed extending to the pacific islands.

SYSTEMATIC ACCOUNT

Suborder: Zygoptera

Family: CHLOROCYPHIDAE

Rhinocypha bisignata Selys

Rhinocypha bisignata Selys, 1853, *Syn. Cal*; 62; Fraser, 1934, *Fauna Brit. India, Odonata*, 2: 49.

Material: 2♂♂, 2 ♀♀, New Amarambalam Reserved Forest, Punjakolli, 23.ii.79. Coll. K. R. Rao.

Distribution: Sole representative of the genus from south India; Palni, Nilgiri and Shevaroy hills, Coorg and to a lesser extent at Khandala.

Remarks: Its larva was originally discovered in the Nilgiris. The species has a graceful flight and exhibits iridescent coloration while on wing. The species was observed to fly actively around a bush near the bank of Puma-puzha river.

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Neurobasis chinensis chinensis (Linnaeus)

Libellula chinensis Linnaeus, 1758, *Systema Naturae*, 1: 545.

Neurobasis chinensis (Linnaeus): Kirby, 1890. *A synonymic Catalogue of Neuroptera Odonata*, 102.

Neurobasis chinensis chinensis (Linnaeus): Ris. 1915, *Tijdschr. Ent.*; 58: 6; Fraser, 1934, *Fauna Brit. India, Odonata*, 2: 121.

Material: 2 ♀, Silent Valley, South of 2nd Camp, 25.i.79, Coll. R. S. Pillai.

Distribution: India, Sri Lanka, Burma, Indochina and Malaysia.

Remarks: Both pairs of wings possess a remarkable deep tint of burnt brown, and pterostigma is present on the hind wings only. This species was seen near fast flowing streams and the specimens were collected from the banks of Kunti River.

Vestalis apicalis apicalis Selys

Vestalis apicalis Selys, 1873, *Bull. Acad. r. Belg.* (2) 36: 612.

Vestalis apicalis apicalis Selys: Fraser, 1929, *J. Bombay nat. Hist. Soc.*, 33: 583; 1934, *Fauna Brit. India, Odonata* 2: 128.

Material: 2 ♂♂, New Amarambalam R. F. Punjakolli, 22.iii.79; 1 ♀, 23.iii.79, Coll. K. R. Rao.

Distribution: Throughout the oriental region.

Remarks: This species was found flying gracefully in the company of the next species. The species usually rests on bushes in heavy shade.

Vestalis gracilis montana Fraser

Vestalis gracilis montana Fraser, 1934, *Fauna Brit. India, Odonata* 2: 128.

Material: 1 ♂, 1 ♀, 23.iii.79, 1 ♀, Amarambalam R. F. Punjakolli, 26.iii.79, Coll. K. R. Rao.

Distribution: S. India; Coorg and the Nilgiri, Wynad.

Remarks: This was found to fly in the company of *Vestalis apicalis apicalis* Selys and

Protosticta hiersevi Fraser. This species also exhibits the same behaviour as the previous species.

Family: PLATYSTICTIDAE

Protosticta hiersevi Fraser

Protosticta hiersevi Fraser, 1922, *Rec. Indian Mus.*, 24: 5; 1933, *Fauna, Brit. India, Odonata* 1: 113.

Material: 1 ♂, 1 ♀, New Amarambalam R. F. Punjakolli, 23.iii.79, Coll. K. R. Rao.

Distribution: S. India: Nilgiris, Anaimalais and Travancore.

Remarks: The female has an extra post model vein in both wings. The abdomen measures 35 mm instead of the usual length of 32 to 33 mm. This species was found in the company of the two species described above. It has a cupreous shining colour and is small in size.

Family: PLATYCNEMIDAE

Copera marginipes (Rambur)

Platycnemis marginipes Rambur, 1842, *Hist. nat. ins. Neuropteres*, 240.

Copera marginipes (Rambur): Kirby, 1890, *A synonymic catalogue of Neuroptera Odonata*, 129; Fraser, 1933, *Fauna Brit. India, Odonata*, 1: 192.

Material: 1 ♂, 11 km, from 3rd Camp of Silent Valley, 1.ii.79, Coll. R. S. Pillai.

Distribution: India, Nepal, Burma and Malaysia in the East.

Remarks: The species was collected from Bamboo forests along the banks of stagnant water bodies. The species shows a number of variations.

Copera vittata (Selys)

Psilocnemis vittata Selys, 1863, *Bull. Acad. Belg.* (2): 170.

Copera vittata (Selys): Kirby, 1890, *A synonymic catalogue of Neuroptera Odonata*, 117; Fraser, 1933, *Fauna Brit. India, Odonata*, 1: 198.

Material: 2 ♂♂, New Amarambalam R. F. Punjakolli, 23.iii.79, Coll. K. R. Rao.

Distribution: Widely distributed throughout southern Asia.

Remarks: The species rests on bushes in heavy shade near the bank of Pumapuzha.

Family: COENAGRIONIDAE

Ceriagrion auranticum Fraser

Ceriagrion auranticum Fraser, 1923, *J. Bombay nat. Hist. Soc.*, 29: 748.

Ceriagrion auranticum Fraser: Asahina, 1967, *Jap. J. Zool.*, 15(3): 307.

Material: 3♂♂, New Amarambalam R. F. Sayivala, 16.iii.79; 1♂, Punjakolli, 22.iii.79, Coll. K. R. Rao.

Distribution: Restricted to the Western Ghats around Nilgiri Wynad.

Remarks: Reddish brown dragonflies collected well away from water. The species usually keeps to scrub or tall grass.

Pseudagrion malabaricum Fraser

Pseudagrion malabaricum Fraser, 1924, *Rec. Indian Mus*; 26: 494; 1933, *Fauna Brit. India, Odonata*, 1: 284.

Material: 2♂♂, New Amarambalam R. F. Nedungayam, 23.iii.79, Coll. K. R. Rao.

Distribution: Throughout the Western Ghats: Coorg, Kodaikanal, Nilgiris, Ootacamund, Palni hills and in Sri Lanka.

Remarks: Collected near stagnant water adjacent to Krimpuzha river. Usually they are found in great numbers and their presence and their colour literally makes the area look blue.

Aciagrion hisopa (Selys)

Pseudagrion hisopa Selys, 1876, *Bull. Acad. Belg. Cl. Sci.* (2), 42: 509.

Aciagrion hisopa (Selys): Selys, 1891, *Ann. Mus. Civ. Genova*, 30: 512; Fraser, 1933, *Fauna Brit. India, Odonata*, 1: 340.

Material: 1♂, New Amarambalam R. F. Sayivala, 16.iii.79, Col. K. R. Rao.

Distribution: India, Burma, Sri Lanka and Malaysia.

Remarks: The specimens were collected from the banks of a small stream in a bamboo forest.

Ischnura aurora aurora (Brauer)

Agrion delicatum Hagen, 1858, *Verh. Zool. Bot. Ges. Wien*. 8: 479.

Ischnura delicata (Hagen): Selys, 1876, *Bull. Acad. r. Belg. cl. Sci.* (2) 41: 281; Fraser, 1933, *Fauna Brit. India, Odonata*, 1: 360.

Ischnura aurora (Brauer): Ris, 1915, *Nova Caledonia, Zool.*, 2(4): 67.

Ischnura aurora aurora (Brauer): Lieftinek, 1949. *Nova Guinea* (New Ser.) 5: 220.

Material: 1♂, 1♀, Silent Valley, 11 km from 3rd Camp, 1.ii.79; 1♂, around 3rd Camp 4.ii.79, Coll. R. S. Pillai.

Distribution: Widely distributed throughout southern Asia, India, Sri Lanka, Burma, Malaysia, New Guinea, Australia, Philippines.

Remarks: This species has remarkable powers of flight and making use of upper air currents has spread all over southeast Asia.

Agriocnemis pieris Laidlaw

Agriocnemis pieris Laidlaw, 1919, *Rec. Indian Mus*; 16: 180; Fraser, 1933, *Fauna Brit. India, Odonata*, 1: 384.

Material: 1♂, New Amarambalam R. F. Nedungayam, 28.iii.79, Coll. K. R. Rao.

Distribution: Western Ghats, from Castle Rock to Malabar, Nilgiris and Coorg.

Remarks: The specimens were collected from the banks of stagnant pools surrounded by grass.

Agriocnemis splendidissima Laidlaw

Agriocnemis splendidissima Laidlaw, 1919, *Rec. Indian Mus*; 16: 180; Fraser, 1933 *Fauna Brit. India, Odonata*, 1: 392.

Material: 1♂, Silent Valley, 11 km. from 3rd Camp 1.ii.79, Coll. R. S. Pillai; 1♂, New Amarambalam R. F. Nedungayam, Coll. K. R. Rao.

Distribution: Poona, Mhow, Khandala, Malabar; Nilgiris and Coorg.

Remarks: The specimens were collected from beds of stagnant water bodies or narrow streams with grasslands around.

Family: LIBELLULIDAE
Sub-Order: Anisoptera

Orthetrum chrysis Selys

Libella testacea race *chrysis* Selys, 1891, *Ann. Mus. civ. Genova*, 30, 462.

Orthetrum chrysis Selys: Ris, 1900, *Archiv. fur. Natur.*, 1: 86; Fraser '936. *Fauna Brit. India, Odonata*, 3: 310.

Material: 1 ♂, Silent Valley, c. 2 km. away from 3rd Camp 3.ii.79, Coll. R. S. Pillai.

Distribution: India: Chanan in Travancore border, Kotagiri, in Nilgiris; Sri Lanka; Burma and Malaysia.

Remarks: Collected from the beds of small mountain streams.

Orthetrum pruinosum neglectum (Rambur)

Libellula neglecta Rambur, 1842, *Hist. nat. Ins. Neuropteres*, 86.

Libellula pruinosa (Brauer) 1868, *Verh. Zool. Bot. Ges. Wien*; 15: 1013.

Orthetrum pruinosum (Brauer): Kirby, 1886, *Proc. Zool. Soc. Lond*; 327.

Orthetrum pruinosum neglectum (Rambur): Ris. 1909, *Collections Zool. du Baron, Ee de Selys — Long champs*, 9: 181; Fraser, 1936. *Fauna Brit. India, Odonata*, 3: 311.

Material: 1 ♂, 1 ♀, Silent Valley, Mukkali, 18.i.79, Coll. R. S. Pillai.

Distribution: Throughout India, Sri Lanka, Burma extending to Tibet, Indochina, and Hongkong.

Remarks: Collected near a forest stream in soft wood plantation. This species occurs everywhere from plains to an altitude of 7250'.

Orthetrum sabina (Drury)

Libellula sabina Drury, 1770, *Illustrations of Natural History*, 1: 114.

Orthetrum sabina (Drury): Kirby, 1889, *Trans. Zool. Soc., Lond.*; 12: 302; Fraser, 1936, *Fauna Brit. India, Odonata*, 3: 300.

Material: 1 ♂, New Amarambalam R. F. Punjakolli, 22.iii.79, Coll. K. R. Rao.

Distribution: Throughout India, Sri Lanka, Burma and ranging from Somaliland, Persia to Samoa and Australia.

Remarks: Collected from the bank of a narrow stream away from the main river Olikatodu.

Indothemis caesia (Rambur)

Libellula caesia Rambur, 1842, *Hist. nat. ins. Neuropteres*, 95.

Indothemis limbata (Rambur): Ris, 1911, *Collections Zool. de Baron E. de Selys — Longchamps*, 12: 529.

Indothemis caesia (Rambur): Fraser, 1936, *Fauna Brit. India, Odonata*, 3: 340.

Material: 1 ♂, New Amarambalam R. F. Punjakolli, 21.iii.79, Coll. K. R. Rao.

Distribution: Masinagudi at the foot of Sigur Ghats in Nilgiris, Hasimara, West Bengal and one specimen recorded from Bangkok.

Remarks: Collected from burnt down patches of soft wood forest area.

Crocothemis servilia servilia (Drury)

Libellula servilia Drury, 1770, *Illustrations of Natural History*, 1: 112.

Crocothemis servilia servilia (Drury): Fraser, *Fauna Brit. India, Odonata*, 3: 345.

Material: 1 ♂, Silent Valley South of 2nd Camp, 25-1-79, Coll. R. S. Pillai.

Distribution: Mesopotamia, India, Sri Lanka and Burma; S. Asia to Japan, the Philippines and Australia and southwards to Sunda Archipelago.

Remarks: Collected from the banks of Kunti river.

Diplacodes trivialis (Rambur)

Libellula trivialis Rambur, 1842, *Hist. Nat. Ins. Neuropteres*, 115.

Diplacodes trivialis (Rambur): Karsch, 1891, *Ent. Nachr.* 17: 246; Fraser, 1936, *Fauna Brit. India, Odonata*, 3: 337.

Material: 1 ♀, Silent Valley, Kantipuzha, 17.i.79, Coll. R. S. Pillai; 1 ♂, Silent Valley, Eastern side of camp, Coll. R. S. Pillai; 1 ♂, c. 11 km. from 3rd Camp 1.ii.79. Coll. R.

S. Pillai; 3 ♂♂, 4 ♀♀, 21-26.iii.79, New Amarambalam R. F. Punjakolli, Coll. K. R. Rao; 1 ♀, 14.iii.79, Sayivala, Coll. K. R. Rao.

Distribution: Ranges from Seychelles to the Pacific through India, Sri Lanka, Burma, S. Asia to Formosa and the Philippines.

Remarks: It is one of the commonest dragonflies found in India. Often seen on roadsides where it rests on grass. Distributed at all elevations.

Neurothemis fulvia (Drury)

Libellula fulvia Drury, 1773, *Illustrations of Natural History*, 2: 84.

Neurothemis fulvia (Drury): Kirby, 1889, *Trans. Zool. Soc. Lond.*, 12: 271; Fraser, 1936, *Fauna Brit. India, Odonata*, 3: 353.

Material: 1 ♂, New Amarambalam R. F. Meenmutty, 19.iii.79, Coll. T. S. N. Murthy; 1 ♂, Punjakolli, 23.iii.79, Coll. K. R. Rao.

Distribution: India, sparingly distributed all over southwest India and parts of Tamilnadu, Madhya Pradesh, Uttar Pradesh, Bihar, West Bengal, Assam and Tripura; Nepal; Indochina and Sumatra in the East.

Remarks: This species has been collected from shady jungle streams. It usually occurs in wet and semi-wet areas especially in the submontane regions.

Neurothemis intermedia intermedia (Rambur)

Libellula intermedia Rambur, 1842, *Hist. Nat. Ins. Nevropteres*, 91.

Neurothemis intermedia (Rambur) Selys, 1889, *Ann. Mus. Civ. Genova* 27: 454.

Neurothemis intermedia intermedia (Rambur): Ris, 1911, *Collections Zool. dw Baron E. de Selys Long champs*, 13: 551; Fraser, 1936, *Fauna Brit. India, Odonata*, 3: 357.

Material: 1 ♂, Silent Valley, 2nd Camp, 22.i.79, Coll. R. S. Pillai; 2 ♀♀, 2 km from 3rd Camp, 3.ii.79, Coll. R. S. Pillai; 1 ♂, around 3rd Camp 4.ii.79, Coll. R. S. Pillai; 11 ♂♂, 15 ♀♀, New Amarambalam R. F. Sayivala, 15 to 19.iii.79, Coll. K. R. Rao;

13 ♂♂, 9 ♀♀, Punjakolli, 21-26.iii.79, Coll. K. R. Rao.

Distribution: India, Sri Lanka, Nepal, Indonesia and Western Thai.

Remarks: The species has a weak flight. Collected from the banks of forest streams.

Neurothemis tullia tullia (Drury)

Libellula tullia Drury, 1773, *Illustrations of Natural History*, 2: 85.

Neurothemis tullia (Drury): Kirby, 1890, *A synonymic catalogue of Neuroptera Odonata*, 8.

Neurothemis tullia tullia (Drury): Fraser, 1936, *Fauna Brit. India, Odonata*, 3: 360.

Material: 1 ♂, 3 ♀♀, New Amarambalam R. F. Sayivala, 16 to 19.iii.79, Coll. K. R. Rao; 9 ♂♂, 4 ♀♀ Punjakolli, 26.ii.79, Coll. K. R. Rao; 10 Nedungayam, 28.iii.79, Coll. K. R. Rao.

Distribution: India, Sri Lanka; Nepal; Indonesia and Northern Thai in the East.

Remarks: Collected from weedy streams in the forest. Its flight is short and weak. They have protective coloration.

Trithemis aurora (Burmeister)

Libellula aurora Burmeister, 1839, *Handbuch der Entomologie*, 2: 859.

Trithemis aurora (Burmeister): Brauer, 1868, *Verh. Zool. Bot. Ges. Wien.*, 18: 177; Fraser 1936, *Fauna Brit. India, Odonata*, 3: 383.

Material: 2 ♂♂, 1 ♀, New Amarambalam R. F. Punjakolli, 21-22.iii.79, Coll. K. R. Rao.

Distribution: India; Tibet; Nepal; Philippines; Malaysia and Indonesia.

Remarks: They were seen to rest on herbage along the banks of forest streams. Males are very active. Females wander far away from water.

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